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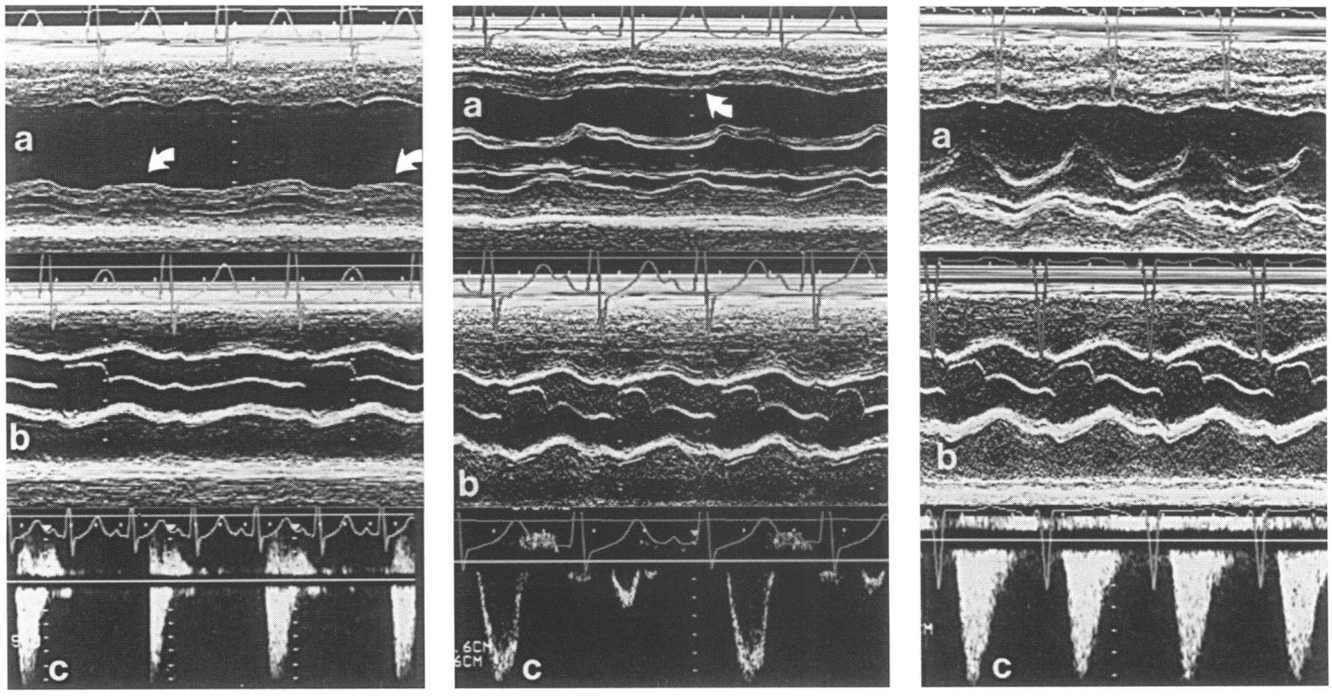
IMAGES IN CARDIOLOGY

Extreme pulsus alternans presenting as 2:1 electromechanical dissociation

A 12 year old boy presented with pulmonary oedema and severe hypertension and was found to be in end stage renal failure. The echocardiogram showed a dilated but well contracting left ventricle with mild hypertrophy. He was ventilated for 24 hours, but after haemodilalysis was started he was able to be extubated and became ambulant. During his fourth dialysis cycle, 5 days after admission, he became dizzy, hypotensive, and bradycardic. Auscultation and an electrocardiographic monitoring lead revealed a heart rate that was double his pulse rate. The echocardiogram showed that the aortic valve only opened every second electrocardiographic complex (left panel b) and a Doppler signal in the descending aorta was only present every second electrocardiographic complex (left panel c). Ventricular function was considerably depressed and an M mode tracing showed alternate strong and weak contractions (arrows) (left panel a). The mitral, tricuspid, and pulmonary valves opened with every electrocardiographic complex. Serum calcium was 1·55 mmol/l. After calcium was replaced and an infusion of dobutamine (5 μg/kg/min) was started he initially developed palpable pulsus alternans (middle panel a, b, c) and then full pulses (right panel a, b, c).

ERIC ROSENTHAL



In all three panels (left, middle, right) a is an M mode tracing of left ventricle, b is an M mode tracing of aortic valve, and c is a Doppler tracing from the descending aorta. All traces are at the same paper speed except for the left panel c which is at half speed. Time markers are 0·2 s. Depth markers are 1 cm in a and b and 20 cm/s in c.